

JOINT EVENT

8<sup>th</sup> International Conference on **Cosmetology & Skin Care**  
&  
14<sup>th</sup> International Conference and Exhibition on  
**Cosmetic Dermatology and Hair Care**

August 13-14, 2018 | Madrid, Spain

**The hair clock or (to put it another way) why is hair growth cyclical?****Andrea Marliani**

University of Florence, Italy

How long the anagen phase lasts is determined by the amount of energy available. For the anagen phase and protein synthesis to be maintained, the follicle needs ATP energy. This energy is released by metabolizing glucose through glycolysis and by the Pentose Phosphate Shunt. Glucose continues to be produced during the Krebs Cycle. ATP is produced during glycolysis, while NADPH is produced in the Pentose Phosphate Shunt. The metabolism of glucose is activated (is turned on and off) by the adenylyl cyclase enzyme. When this enzyme is withheld, glycolysis stops, as do the Pentose Phosphate Shunt and the Krebs Cycle. When glucose is no longer metabolized, the energy supply is turned off; and this ends the anagen phase. The hair cycle is controlled by sex steroids. Not by hormones circulating in the blood but by hormones that are produced within the follicle itself. Dihydrotestosterone inhibits the adenylyl cyclase enzyme, while estrone stimulates it. A follicle in the anagen phase always tries to reach the catagen stage and then the telogen stage. For the follicle to be able to move on to the catagen stage, 5 alpha reduction is required. The 5 alpha reductase enzyme changes testosterone into dihydrotestosterone. 5 alpha reduction uses the NADPH produced in the Pentose Phosphate Shunt. It is, therefore, dependent on NADPH. Glycolysis stops at the end of the anagen phase, as does the Pentose Phosphate Shunt; and NADPH is no longer produced. There is no 5 alpha reduction, and all metabolic activity is geared to aromatization. There is an abundant production of estrone at the close of the anagen phase; and this activates the adenylyl cyclase enzyme. Glycolysis begins again and the cycle sets off again.

**Biography**

Prof Andrea Marliani is Professor Emeritus and Founder of the Italian Society of Hair Science and Restoration - S.i.Tri. He is a Dermatologist, Endocrinologist and Trichologist. Professor at the Master Course of Hair Sciences at the department of Medicine of the University of Florence. Born in Florence (Italy) on July 15th, 1947. Scientific director and creator of The Italian Journal of Tricology starting April 10, 1997. Professor at the International School of Esthetic Medicine of Rome from January 1993. Professor of the graduate course in Scientific Information on Pharmaceuticals University of Florence, 2005 / 2006 Department of Pharmacology. Professor of master course in Esthetic Dermatology at University of Florence department of Internal Medicine, 2007 / 2008 and 2009 / 2010. Prof. Marliani Andrea is the author of over 200 scientific publications.

segreteria@sitri.it

**Notes:**